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ABSTRACT

The purpose of this study was to locate and evaluate high-school-level economic software compatible with an Apple II or IIe computer. To identify software, computer searches were run, bibliographies were scanned, and reviews were collected. Only software that was recommended by some outside source was included in the evaluation. The following seven programs are evaluated in this report: "Bargain"; "Investing for Your Future"; "Sell Lemonade"; "Sell Robots"; and "South Dakota: An Economic and Mathematics Simulation." For each program complete bibliographic information is provided, the content is described, and the major strengths and weaknesses are discussed. Each program is also critiqued for its educational, technical, and management soundness. Compared to other subject areas in the high school curriculum, educational software for economics is one of the least developed. To help alleviate the economic software shortage, the Joint Council on Economic Education is in the process of assembling specialists to plan a means of developing quality software that is inexpensive. (RM)

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A Preview of High School Level Economic Software

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Submitted in partial fulfillment of the requirements
for the course E591--Exit Project
Indiana University at South Bend
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A Preview of High School Level Economic Software

Computers forecast weather and enable astronauts to explore outer space. They allow banks to make international financial transactions in seconds and to link the entire developed world in an electronics network. They assist school administration in computing honor rolls, grades, and scheduling, but this marvelously efficient computer system on which "virtually all United States production and service industries rely" {Cooper 5} remains in an early stage of development for education. Education, the sleeping giant, has begun to awaken to the vast technological revolution and the increase in productivity Computer Assisted Instruction {CAI} could provide for the classroom teacher.

Social study's educators whose essential function has been to dispense information have been forced to use labor intensive methods of instruction while CAI could have been used as an effective, creative, and flexible educational tool {5}---a tool that could have expedited curriculum goals and objectives and a tool that could have helped in the "interpretation and analysis of economic concepts" {Shermis E-17}.

The Problem

High school economic teachers did not willfully chose to remain backward in the use of CAI. Circumstances slowed the implementation of the new revolutionary tool in the economics' classroom---circumstances over which there was little control. The main dilemma was the shortage of economic software. Another problem was the exorbitant amount of time and effort that was required to locate and evaluate quality software which met curriculum goals and objectives. The teachers also encountered difficulty because of incomplete software preview guides and departmental budget constraints in purchasing quality software.

Purpose of Study

The purpose for this study was to locate and evaluate high school level economic software.

Procedure of Study

In an effort to obtain information concerning high school level economic software packages and published reviews, two computer database searches were made. The first search involved Resources in Computer Education (RICE) and the second involved Educational Resources Information Center (ERIC). To preview economic software several places

and people were contacted. To see a listing of the places and the people who were contacted along with the computer journals and magazines that were explored see Appendix A.

Selection of the previewed software was based on the following prerequisites: The programs were recommended and created for grades nine through twelve, the subject matter covered economic concepts, the software was readily available and compatible with an Apple II or IIe computer.

The evaluation instrument was developed after locating and previewing eighteen microcomputer software evaluation forms and checklists. No published evaluation form could be found that was specifically designed for economics, and no standard evaluation instrument could be found on which educators have agreed. An evaluation form was therefore developed that included concepts and criteria that were common to the majority of published evaluation forms and checklists.

Limitation of Study

The main limitations to the study were the lack of published economic software and the even greater difficulty of finding economic software to preview. The Educational Software Selector, 1984 Edition which was published by the Educational Products Information Exchange (EPIE) and Teachers College Press listed 467 pages of educational software. This software selector "a definitive database of

consumer information about all educational software being marketed to schools and colleges" (Hall preface) listed only five economic programs recommended for grades nine through twelve which would run on the Apple Computer (423-5). The difficulty of finding published software was also encountered in other guides to educational software. For an example, Software Reports, which also consisted of several hundred pages of educational software, listed just two economic programs that were recommended for grades five through adult. The most comprehensive list of high school level economic software was developed by Dr. Paul Thompson, Director for the Center for Economic Education at Mankato State University. His list included the name of the program, the developer and seller, required hardware, and the grade level of each program. The author found fifty-five programs on the list that could run on an Apple computer, but the list did not specify the price or provide evaluations of the mentioned software (Thompson 1, 2, Appendix).

Finding available economic software to preview was extremely difficult. In September of 1984 the Indiana Clearinghouse for Computer Education (ICCE) in Indianapolis was visited. One of the functions of the Clearinghouse is to assist Indiana educators in previewing and evaluating hardware and software. The ICCE had only three economic packages available for use at the high school level and only

two could be previewed because the third had a warped diskette. Therefore, various schools, preview centers, and publishers were contacted in an effort to locate available economic software to preview. The problem of limited economic software was also encountered at the preview centers and schools. Due to copyright infringement, software companies were unwilling to send material for preview purposes. This further limited the supply of previewable material.

Another limitation was the lack of standard evaluation forms and standard criteria in the method of evaluation. The subjective nature of evaluations was a concern to the author who attempted to develop an instrument and evaluation process that was as objective as possible.

Definition of Terms

Branch: "To transfer control to an instruction in a computer program other than the next one in sequence" {Kindread 496}.

Bugs: Problems in a program "...that can cause the program to malfunction..."{Heller 162}.

Computer Aided Instruction {CAI}: "An educational concept which places the student in a conversational mode with a computer which has a preprogrammed study plan. The programmed course selects the next topic or place of study according to previous responses from the student, allowing each student to progress at a pace directly related to his learning capabilities" {Supple 48}.

Crashes: A problem in the hardware or software which causes the program to malfunction or stop {Heller 165}.

Data: " A set of basic facts about a thing, person, or transaction. It becomes information when organized in a meaningful way" {Kindread 496-497}.

Debug: "To detect and eliminate the errors in a computer program" {Kindread 497}.

Diskette: "A flat oxide coated surface capable of being magnetized to store data, used with small computer systems" {Kindread 499}.

Documentation: "...manuals, instructions, and other printed

material that manufactures include with their products to explain how to use them" {Heller 164}.

Drill and practice: "Assumes that the concept or skill has been taught previously" {Heck 18}.

Educational Games: "...a game in which one or more students participates and in the process learns new concepts or skills" {Hall 545}.

Hardware: "The term applied to the equipment and physical components of a computer system" {Kindred 504}.

Instructional games: "...a situation in which the goal is to beat an opponent-another student or the computer" {Davis 31}.

K: "{Reference} to memory size in bytes, e.g.,..." and "...a byte can be roughly translated as one alphabetic character" {Hall 545}.

Menus: "Choices or options that a program offers you" {Heller 163}.

Package: "A program or series of programs already packaged as a product for sale" {Friedman 245}.

Problem solving: "Uses general algorithms common to one or more problems" {Heck 18}.

Program: "Set of instructions the computer uses to solve a problem" {Sodano 126}.

Simulation: "{Using} the computer to model a real-life or imaginary situation in a dynamic fashion so that students may interact with it and thereby learn about it" {Hall 545}.

Software: "Programs for the computer to follow..." {Sodano 126}.

Tutorial: "{Using} the computer to implement most of the instructional process" {Hall 546}.

Criteria for Evaluation Form

The development of the evaluation form substantially relied on microSIFT, an educational software and courseware clearinghouse, for background information and for the evaluation process. Although microSIFT offered a nearly complete review system, it provided no criteria for analyzing economic concepts.

The microSIFT evaluation process included the following four stages:

Sifting - which screened out those programs that were not instructional in nature and determined a package's operational readiness and hardware compatibility (Evaluator's Guide for Microcomputer - Based Instructional 81).

Package description - included program format, instructional purpose and techniques, type of package, available documentation, and the hardware configuration necessary for operation (81).

Assessment - of content, instructional quality, and technical quality of the package (81).

In-depth evaluation - based on numeric values (Wagner 21).

Evaluation Form

I

Name of program: The name of the evaluated program was listed on this line. The title of the software package was listed under source and copyright date if the evaluated program was included with several other programs.

Price: The price of the software package was listed on this line.

Source and copyright date: This line listed the publisher, address, and date of publication, along with the title of multi-program packaged software.

Level of material by grade: Only economic software recommended for grades nine through twelve was considered.

Instructional purpose:

Remediation: Software that was developed for grades seven through twelve was listed as remediation instead of standard instruction if it could be used at the high school level. The economic concepts consisted of the simplest principles which would be presented in a very elementary manner with no required economic prerequisite skills.

Standard instruction: Software developed for grades nine through twelve was listed under standard instruction. Economic concepts would be more advanced, presented in a more complex manner,

and require some economic prerequisite skills.

Enrichment: Software developed for college and advanced high school students was listed on this line. Economic concepts in this category would be complex and presented in a manner that required an understanding of basic economic principles and interpretation of graphs and symbols.

Instructional techniques: The definitions for the instructional categories of simulation, drill and practice, tutorial, problem solving, and educational game can be located in the glossary.

II

Economic evaluation categories: The economic categories on the evaluation form were developed by the Joint Council on Economic Education (JCEE) in 1977. The economic guidelines were published as a master curriculum guide for the nation's schools in an effort "... to develop a concise statement or framework of basic concepts for teaching economics in schools below the college level." (Hansen 1) A revision of these guidelines has just been released, therefore, the reader may wish to revise the following economic categories to coincide with the new JCEE guidelines when they become available.

A. Basic economic problems: The JCEE divided what it called the economic problems into five subcategories which included the following: economic wants, productive resources,

scarcity and choices, opportunity costs and trade-offs, and marginalism and equilibrium {9}.

B. Economic systems: The economic systems were divided into the following six subcategories:

> nature and types of economic systems; economic incentives; specialization, comparative advantage, and the division of labor; voluntary exchange; interdependence; and government intervention and regulation {9}.

C. Microeconomics: Resource allocation and income distribution: This category was subdivided into the following five subcategories:

> markets, supply and demand; the price mechanism; competition and market structure; information costs, resource immobility, and externalities; and income distribution and government redistribution {9}.

D. Macroeconomics: Economic stability and growth: The macroeconomic's category was subdivided into the following seven subcategories:

> aggregate supply and productive capacity; unemployment and inflation; price level changes; money and monetary policy; fiscal policy, taxes, expenditures, and transfers; economic growth; and savings, investment, and productivity {9}.

Major strengths: This category included comments made by the author describing the program's best qualities.

Major weakness: This category included comments made by the author describing major weaknesses that were observed when the program and its documentation were evaluated.

III

Ratings: The ratings were not listed in order of importance nor were they designed to include all possible identifiers. The ratings were broken down into the following three categories to expedite the evaluation process: education, technical, and management. For a detailed explanation and description of the identifiers under the above three categories read the Evaluator's Guide for Microcomputer-Based Instructional Packages listed in Works Cited.

EVALUATION FORM

I

Name of program: "Bargain"

Price: $48.00

Source and copyright date: Minnesota Educational Computing Consortium, 2520 Broadway Drive, Lauderdale, MN 55113; in a 7-program package, "Secondary Social Studies", Vol. 2; 1979.

Required hardware: Apple II

Level of material by grade: 7-12

Description of program: There are seven social studies programs on this disk. The economic section is called "Bargain". "Bargain" allows the player to represent the employer or union in a collective bargaining process. There are six randomly selected variables in the negotiations. The variables include the business climate, inflation rate, company and union size, public opinion, and settlement patterns. The variables provide the background to business/labor relations and the parameters under which negotiations can take place.

Instructional purpose

- x Remediation
- x Standard instruction
- Enrichment

Instructional techniques

- x Simulation
- Drill and practice
- Tutorial
- Problem solving
- Educational game

II

Economic evaluation categories

- Basic economic problems
- Economic systems
- x Microeconomics: Resource allocation and income distribution
- Macroeconomics: Economic stability and growth

III

Reviewer's comments

Major strength: The program is motivational because it allows the student to use his own logic and decision making skills in a bargaining session. The documentation makes this a flexible program for instructional purposes.

Major weakness: The program is heavily weighted towards wage rates with little weight given to the other variables. Students could become frustrated when their proposals are continually refused without an explanation to which part of the proposal is unacceptable.

IV

Rating

Not available=0, unsatisfactory=1, poor=2, average=3, good=4, excellent=5

Education evaluation categories

Use of package is motivational	3
Material is logically presented	4
Objectives are clear and appropriate	4
Clues and prompts help students answer questions	3
Content is accurate	3
Branching is used for right and wrong answers	5
Students' responses are positively reinforced	3
Content is free of stereotypes	5
Student's creativity is stimulated	3

V

Technical evaluation categories

The program is clear and easy to read	5
Student controls rate and sequence	4
Student can access the program's "Menu" for help	4
Program is free of technical problems	3
Feedback is immediate	5
Student can operate the program easily and independently	5
Program allows for student mistakes without terminating	4

VI

Management evaluation categories

Directions are clear and easy to follow	5
Support materials and suggestions are included	5
Teacher is helped in tracking student's progress	0
Flexibility meets differentiating needs of students	0
Avenues of student evaluation are provided	0
Record keeping is possible	0
Teacher can set up the package easily	5

EVALUATION FORM

I

Name of program: "Economics: What, How, And For Whom"

Price: $159.00

Source and copyright date: Focus Media, Inc., 839 Scewart Ave., Garden City, NY 11530; 1983

Required hardware: Apple II or Apple IIe

Level of material by grade: 10-12, and college

Description of program: This program uses charts, graphs, hypothetical situations, decision making, and interactive exercises to help students understand basic economic concepts such as the law of supply and demand, opportunity costs, and production possibilities. The five diskettes provide an extensive coverage of economic principals, definitions and laws.

Instructional purpose

- Remediation
- x Standard instruction
- Enrichment

Instructional techniques

- Simulation
- Drill and practice
- x Tutorial
- Problem solving
- Educational game

II

Economic evaluation categories

- x Basic economic problems
- x Economic systems
- x Microeconomics: Resource allocation and income distribution
- x Macroeconomics: Economic stability and growth
- The world economy
- Economic institutions

III

Reviewer's comments

Major strength: This program is flexible and can be used

in a variety of different ways by the instructor. The review at the end is helpful .

Major weakness: The demand and supply curves are shown without explanation. There are constant interruptions in the program while the computer reads the disk which might frustrate the average student.

IV

Ratings

Not available=0, unsatisfactory=1, poor=2, average=3, good=4, excellent=5

Educational evaluation categories

Use of package is motivational	2
Material is logically presented	3
Objectives are clear and appropriate	3
Clues and prompts help students answer questions	2
Content is accurate	3
Branching is used for right and wrong answers	0
Students' responses are positively reinforced	3
Content is free of stereotypes	5
Student's creativity is stimulated	2

V

Technical evaluation categories

The program is clear and easy to read	3
Student controls rate and sequence	5
Student can access the program's "Menu" for help	1
Program is free of technical problems	5
Feedback is immediate	5
Students can operate the program independently	3
Program allows for student mistakes without terminating	3

IV

Management evaluation categories

Directions are clear and easy to follow	3
Support materials and suggestions are included	3
Teacher is helped in tracking student's progress	3
Flexibility meets differentiating needs of students	3
Avenues of student evaluation are provided	5
Record keeping is possible	0
Teacher can set up the package easily	5

EVALUATION FORM

I

Name of program: "Electronic Money"

Price: $36.00

Source and copyright date: MECC Distribution Center, 3490 Lexington Ave. North, St. Paul, MN 55113, 1983.
Required hardware: Apple II

Level of material by grade: 6-9

Description of program: In the first section teachers use hand-out sheets and transparencies to introduce the functions of money and how it changes over time . In the second section students use the computer along with handout sheets to manage an imaginary family budget. The students use a money management simulation which allows the students to make decisions on whether to use cash, credit cards, checks, or electronic funds transfers for paying bills.

Instructional purpose

- Remediation
- x Standard instruction
- Enrichment

Instructional techniques

- x Simulation
- Drill and practice
- Tutorial
- Problem solving
- Educational game

II

Economic evaluation categories

- Basic economic problems
- Economic systems
- x Microeconomics: Resource allocation and income distribution
- Macroeconomics: Economic stability and growth
- The world economy
- Economic institutions

III

Reviewer's comments

Major strength: This program has excellent documentation which provides flexability for classroom use.

Major weakness: A creative student may encounter frustration if he does not follow the worksheet. If he tries to pay off two of the accounts, he will encounter difficulty due to flaws in the program. The program accepts the interchange of commas for periods. In real life the use of a comma instead of a period would make a great deal of difference in the transfer of money.

IV

Rating

Not available=0, unsatisfactory=1, poor=2, average=3, good=4, excellent=5

Education evaluation categories

Use of package is motivational	3
Material is logically presented	5
Objectives are clear and appropriate	5
Clues and prompts help students answer questions	3
Content is accurate	4
Branching is used for right and wrong answers	3
Students' responses are positively reinforced	1
Content is free of stereotypes	5
Student's creativity is stimulated	3

V

Technical evaluation categories

The program is clear and easy to read	5
Student controls rate and sequence	4
Student can access the program's "Menu" for help	3
Program is free of technical problems	2
Feedback is immediate	5
Student can operate the program easily and independently	2
Program allows for student mistakes without terminating	5

VI

Management evaluation categories

Directions are clear and easy to follow	2
Support materials and suggestions are included	5
Teacher is helped in tracking student's progress	5
Flexibility meets differentiating needs of students	2
Avenues of student evaluation are provided	5
Record keeping is possible	4
Teacher can set up the package easily	4

EVALUATION FORM

I

Name of program: "Investing For Your Future"

Price: Price unavailable

Source and copyright date: Louisiana Council on Economic Education, P.O. Box 16077, LSU, Baton Rouge, LA 70893; 1983.
Required hardware: Apple II

Level of material by grade: 9-12

Description of program: The student is presented with the hypothetical problem of spending $100,000 among five fictitious corporations listed on the stock market handout sheet. The student makes his purchases based on written reports that describe each company's purpose, strengths, and weaknesses. At the end of an imaginary sixteen years the student is given a report on the worth of his stock and dividend income. The student is then allowed to adjust his portfolio before his final financial gains or losses are recalculated.

Instructional purpose

- Remediation
- x Standard instruction
- x Enrichment

Instructional techniques

- x Simulation
- Drill and practice
- Tutorial
- Problem solving
- Educational game

II

Economic evaluation categories

- x Basic economic problems
- Economic systems
- x Microeconomics: Resource allocation and income distribution
- Macroeconomics: Economic stability and growth
- The world economy
- Economic institutions

III

Reviewer's comments

Major strength: This program is useful in showing how economic forces over the short and long run can have an effect on the current value of stocks for individual firms. The program helps motivate students to become skilled in reading and understanding the financial section of the newspaper which is included in the handout sheets.

Major weakness: Evaluation of students progress on the handout sheets are questionable since students can manipulate the results. The handout sheets did not correlate with the financial form on the monitor.

IV

Rating

Not available=0, unsatisfactory=1, poor=2, average=3, good=4, excellent=5

Education evaluation categories

Use of package is motivational	3
Material is logically presented	3
Objectives are clear and appropriate	4
Clues and prompts help students answer questions	0
Content is accurate	3
Branching is used for right and wrong answers	0
Students' responses are positively reinforced	2
Content is free of stereotypes	5
Student's creativity is stimulated	3

V

Technical evaluation categories

The program is clear and easy to read	5
Student controls rate and sequence	3
Student can access the program's "Menu" for help	1
Program is free of technical problems	5
Feedback is immediate	5
Student can operate the program easily and independently	4
Program allows for student mistakes without terminating	3

VI

Management evaluation categories

Directions are clear and easy to follow	3
Support materials and suggestions are included	5
Teacher is helped in tracking student's progress	3
Flexibility meets differentiating needs of students	1
Avenues of student evaluation are provided	1
Record keeping is possible	3
Teacher can set up the package easily	5

EVALUATION FORM

I

Name of program: "Sell Lemonade"

Price: $48.00

Source and copyright date: MECC Distribution Center, 3490 Lexington Ave. North, St. Paul, MN 55112; 1983. Education, P.O. Box 16077, LSU, Baton Rouge, LA 70893; 1983.

Required hardware: Apple II

Level of material by grade: 6-9

Description of program: The student is given the job of running a lemonade stand. The student must decide how much lemonade to make each day, what to charge for the lemonade, and how many advertising signs to make. Variables are randomly selected each day such as weather and road conditions, advertising, production levels, and selling price. All of these variables influence the demand for lemonade.

Instructional purpose

x Remediation
Standard instruction
Enrichment

Instructional techniques

x Simulation
Drill and practice
Tutorial
Problem solving

II

Economic evaluation categories

Basic economic problems
Economic systems
x Microeconomics: Resource allocation and income distribution
Macroeconomics: Economic stability and growth
The world economy

III

Reviewer's comments

Major strength: Good documentation in this program helps

explain assets and expenses. Work-sheets make record-keeping possible. The financial reports on the monitor after each days transactions help the student keep track of his losses or gains.

Major weakness: Competition is not included as a factor in price determination. The connection between prices and their relationship to demand is very vague in this program.

IV

Rating

Not available=0, unsatisfactory=1, poor=2, average=3, good=4, excellent=5

Education evaluation categories

Use of package is motivational	4
Material is logically presented	4
Objectives are clear and appropriate	3
Clues and prompts help students answer questions	0
Content is accurate	4
Branching is used for right and wrong answers	0
Students' responses are positively reinforced	0
Content is free of stereotypes	5
Student's creativity is stimulated	3

V

Technical evaluation categories

The program is clear and easy to read	5
Student controls rate and sequence	3
Student can access the program's "Menu" for help	3
Program is free of technical problems	5
Feedback is immediate	5
Student can operate the program easily and independently	5
Program allows for student mistakes without terminating	5

VI

Management evaluation categories

Directions are clear and easy to follow	5
Support materials and suggestions are included	5
Teacher is helped in tracking student's progress	5
Flexibility meets differentiating needs of students	1
Avenues of student evaluation are provided	5
Record keeping is possible	5
Teacher can set up the package easily	5

EVALUATION FORM

I

Name of program: "Sell Robots"

Price: $30.00

Source and copyright date: The Children's Museum of Indianapolis, Indianapolis, IN; in a 3-program package, "Decision Shop"; 1979.

Required hardware: Apple II

Level of material by grade: 6-9

Description of program: "Sell Robots" is a creative and stimulating simulation that makes the student the beneficiary of a surplus robot store. The student's main objective is to maximize the stores' profits each day by selling surplus robots. The student soon learns that demand for his robots are related to price.

Instructional purpose

- x Remediation
- Standard instruction
- Enrichment

Instructional techniques

- x Simulation
- Drill and practice
- x Tutorial
- Problem solving
- Educational game

II

Economic evaluation categories

- Basic economic problems
- Economic systems
- x Microeconomics: Resource allocation and income distribution
- Macroeconomics: Economic stability and growth
- The world economy
- Economic institutions

III

Reviewer's comments

Major strength: This program helps reinforce the economic

concept that price affects demand by showing a histograph and demand curve for each day's sale in relation to price. The animation is clever with appropriate sounds and prompts. The program points out that nothing is free and the cost of working through the program is the loss of the student's time.

Major weakness: The program terminates if the student takes too long. The program has no documentation and returning to the main menu is difficult. Student must go through the directions each time the program is played.

IV

Rating

Not available=0, unsatisfactory=1, poor=2, average=3, good=4, excellent=5

Education evaluation categories

Use of package is motivational	5
Material is logically presented	4
Objectives are clear and appropriate	3
Clues and prompts help students answer questions	5
Content is accurate	5
Branching is used for right and wrong answers	4
Students' responses are positively reinforced	4
Content is free of stereotypes	5
Student's creativity is stimulated	5

V

Technical evaluation categories

The program is clear and easy to read	5
Student controls rate and sequence	4
Student can access the program's "Menu" for help	0
Program is free of technical problems	5
Feedback is immediate	5
Student can operate the program easily and independently	5
Program allows for student mistakes without terminating	5

VI

Management evaluation categories

Directions are clear and easy to follow	5
Support materials and suggestions are included	0
Teacher is helped in tracking student's progress	0
Flexibility meets differentiating needs of students	0
Avenues of student evaluation are provided	0
Record keeping is possible	0
Teacher can set up the package easily	5

EVALUATION FORM

I

Name of program : "South Dakota: An Economic and Mathematics Simulation"

Price: $63.00

Source and copyright date: Modular Educational Programs, Vine Road, Tyner, IN 46572; 1984

Required hardware: Apple II

Level of material by grade: 7-12

Description of program: The program uses economic concepts of profit and loss, demand and supply, public taste, and interest to simulate the free enterprise system and how it affects farming over a ten year period. The students are given a farm to manage and the goal is to make a profit.

Instructional purpose

- Remediation
- x Standard instruction
- Enrichment

Instructional techniques

- x Simulation
- Drill and practice
- Tutorial
- Problem solving
- Educational game

II

Economic evaluation categories

- Basic economic problems
- Economic systems
- x Microeconomics: Resource allocation and income distribution
- Macroeconomics: Economic stability and growth
- The world economy
- Economic institutions

III

Reviewer's comments

Major strength: Student makes decisions and interacts with

economic variables that affects running a farm. The program reinforces the following concepts: taxes increase with income, public taste influences demand, and an increase in supply followed by a decrease in demand will cause prices to fall.

Major weakness: Students must make economic decisions without important background information. There are some remarks that could be construed as offensive such as "Farming is as bad as working for a living."

IV

Ratings

Not available=0, unsatisfactory=1, poor=2, average=3, good=4, excellent=5

Educational evaluation categories

Use of package is motivational	4
Material is logically presented	5
Objectives are clear and appropriate	5
Clues and prompts help students answer questions	4
Content is accurate	3
Branching is used for right and wrong answers	0
Students' responses are positively reinforced	3
Content is free of stereotypes	1
Student's creativity is stimulated	4

V

Technical evaluation categories

The program is clear and easy to read	5
Student controls rate and sequence	5
Student can access the program's "Menu" for help	4
Program is free of technical problems	5
Feedback is immediate	5
Students can operate the program independently	4
Program allows for student mistakes without terminating	5

VI

Management evaluation categories

Directions are clear and easy to follow	5
Support materials and suggestions are included	5
Teacher is helped in tracking student's progress	0
Flexibility meets differentiating needs of students	3
Avenues of student evaluation are provided	0
Record keeping is possible	0
Teacher can set up the package easily	5

Summary

Seven high school level economic software programs were evaluated. Of the seven programs three were published by MECC. The most expensive program cost $159 and the least expensive program cost thirty dollars. All the evaluated programs covered microeconomic concepts with two programs also including basic economic problems. Only one program included economic systems and macroeconomics. None of the programs included the categories of world economy or economic institutions.

The most prominent instructional technique was simulations. All of the evaluated programs were labeled as simulations except for one which was listed as a tutorial.

The educational evaluation categories consisted of nine separate criteria. Of these criteria branching for right and wrong answers was the least available followed by clues and prompts to help students answer questions. The areas receiving the highest ratings were as follows in descending order of occurence: content free of stereotypes, material logically presented, and objectives clear and appropriate.

Under the technical categories, the weakest area dealt with the student's ability to access the program's

menu for help. The criteria receiving the highest rating was immediate feedback which received a perfect score followed by a clear and easy to read program.

The management category had several programs which did not allow for record keeping, tracking students' progress, and avenues of student evaluation. The criteria receiving the highest rating was the ease with which the teacher could set up the package for student use followed by clear and easy directions.

In comparing the educational, technical, and the management categories the educational evaluations received the highest rating closely followed by the technical categories. The management category received the lowest scores and placed thirty percent below the other two categories.

Conclusion

It appeared that compared to other subject areas in the high school's curriculum economics remained one of the least developed in educational software {Cohen 14}. Finding quality software that met economic goals and objectives reduced the arena of available software still further and finding software that used skill material produced only a few "...isolated units of drill work" {Cohen 14}.

After looking through the review guides, preview guides, and educational software catalogues, MECC stood out as the prominent supplier of economic software. MECC's software packages were consistently less expensive and included better documentation than the other suppliers {Thompson 4}.

The Joint Council on Economic Education is in the process of assembling specialists to plan a means of developing quality software which is inexpensive to help alleviate the economic software shortage {5}. Until quality material is developed teachers should not settle for inferior, overpriced, and worthless programs, because a few quality programs are available to meet curriculum goals and objectives. Ideally each teacher should be able to preview software as easily as he previews textbooks, but because of

preview restrictions this has not been the case {7}. Without preview privileges teachers will become more and more dependent on preview guides and other resources to assess the value of software packages. The National Education Association {NEA} forseeing the preview problem has developed a screening system using trained evaluators. Educational software is evaluated on one hundred published criteria under the following three categories: technical reliability, instructional soundness, and ease of use {Kurzius 9}. The previews are published in The Yellow Book of Computer Products for Education from the NEA Educational Computer Service. With other preview guides being developed,it is hoped that teachers in the future will be able to locate inexpensive and quality economic software without spending horrendous amounts of time in locating, previewing, and assessing each piece of software.

Recommendations

The purpose of this study was to locate and evaluate economic software. Due to the difficulty in locating available economic software the following recommendations are made:

1. The Indiana Clearinghouse for Computer Education should make a concerted effort to either buy or lease more high school level economic software for previewing purposes.
2. The Indiana Clearinghouse for Computer Education should rotate all the software it has available to its satellite offices. This would allow teachers to preview software that until now has only been available in Indianapolis.
3. The satellite offices for the Indiana Clearinghouse for Computer Education should also rotate their software to the other regional centers so that all software in Indiana is easily available to Indiana teachers and researchers.
4. The Indiana Clearinghouse for Computer Education should publish a list of all the software it has available for previewing. This list should be divided by subject content areas and suggested grade levels with a description of the program. Each Indiana school system should receive at least one copy of this list.
5. A standard economic software form needs to be developed for economic teachers to use as a guideline.

6. Each school system in Indiana should store a complete and current inventory of educational software preview guides and review guides. These resources should be made readily available for the teachers' use. It is a waste of a teacher's time to look through volumes of catalogues in search of software.

7. Publishers of economic textbooks should consider developing CAI software which correlates with their textbooks.

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Wagner, Walter. "Evaluation of Instructional Computing Programs." Educational Computer Magazine, Sept.-Oct. 1981. (20-1)

Appendix A

1. Indiana Clearinghouse for Computer Education, 902 West New York Street, Educational Social Work Building, Room 2131, Indianapolis, IN 46223.
2. Microcomputer Demonstration Laboratory, Indiana University at South Bend, South Bend, IN.
3. Northern Indiana Educational Service Center, 1030 East Jefferson Blv., South Bend, IN.
4. Elkhart Community Schools Educational Service Center, 2720 California Road, Elkhart, IN 46514.
5. Plymouth Community Schools High School Computer Laboratory, 810 North Randolph Street, Plymouth, IN 46563.
6. Library of Education, Indiana University, Bloomington, IN.
7. Computerland, South Bend, IN.
8. General Micro's Georgetown Software Laboratory, South Bend, IN.
9. Northern Indiana Computer Educational Laboratory, South Bend, IN.
10. Indiana Clearinghouse for Computer Education, Highland Review Center, Highland, IN.
11. Indiana Clearinghouse for Computer Education, Jeffersonville Preview Center, Jeffersonville, IN.

12. Indiana Clearinghouse for Computer Education, Ft. Wayne Preview Center, Ft. Wayne, IN.
13. Queve Inc., Fairfield, IL.
14. Modular Educational Programs, Tyner, IN.
15. Follett Quality Software, 4506 Northwest Highway, Crystal Lake, IL 60014.
16. Director for Indiana Council for Economic Education, Elkhart, IN.
17. Director of Economic Education, Mankato Universiy, Mankato, MN.
18. Associate Director of Social Studies, Virginia Dept. of Education, Richmond, VA.
19. National Council of Economics, 2 Park Ave, New York, NY 10016.
20. Conference on Instructional Computing at Indianapolis, March 17-19, 1985, Co-Sponsored by the Indiana Consortium for Computers and High Technology Education and the Indiana Dept. of Education, Indianapolis, IN.

The following educational software catalogs were examined:

1. Minnesota Educational Consortium
2. Swifts 1983-1984 Educational Software Directory, Sterling Swift, 7901 South I-35, Austin, TX.
3. The Book of Apple Software 1984

4. The Educational Software Selector 1984, Teachers College Press, 1234 Asterdam Ave., New York, NY 10027.
5. 1985 Educational Software Preview Guide, California TECC Software Library and Clearinghouse, SMERC Library and Microcomputer Center, San Mater County Office of Education, 333 Main Street, Readwood City, CA 94063.
6. Software Reports, Trade Service Publications, Inc., 10996 Torreyana Road, San Diego, CA 92121.

The following computer journals and magazines were explored as resources:

1. "Electronic Learning", Scholastic Inc., 730 Broadway, New York, NY 10003.
2. "Classroom Computer News", International Education, 341 Mt. Auburn St., Watertown, MA 02172.
3. "Classroom Computer Learning", Pitman Learning Inc. 19 Davis Drive, Belmont, CA 94002.
4. "The Computing Teacher", International Council for Computers in Education, University of Oregon, Eugene, OR 97403.
5. "Educational Computer", Edcomp Inc., P.O. Box 535, Cupertino, CA 95015.